

Table 1 Hypothetical future configuration capability

Today's System Configurator	Tomorrow's Installation Configurator
User requests System Configurator	User requests customer configuration and enters customer identification number and an "as of" future date. Configurator retrieves customer's installed and on-order position from appropriate hosts and creates a total hardware/software installation configuration as of the given date.
CPU number and model DASD type and quantity Communication controllers and terminals: type and quantity . . . Lease or purchase choice . .	<i>Configurators present a series of screens for user input. User enters:</i> Desired capacity Projected volume of data; performance objective Number of local/remote users; hours of usage; transaction rates; desired response times . . . Customer's financial objective . .
Line item explosion of system	<i>Configurator Output</i> Line item explosion of net new items for installation Projected installation configuration, including capacity, response times, and overall recommended terms

Management challenges. The evolution to cooperative, interactive distributed systems has already begun, and the migration to those systems will be rapid. The overall management plans are in place to do the following things:

- Facilitate the evolution of each host system and its data and applications to a distributed mode of operation
- Achieve cooperative interaction among host systems
- Integrate outboard, local-area processors and intelligent workstations into the total system
- Anticipate and control network traffic flow
- Maintain full service levels throughout the evolution

Cross-matching the plans just given against the previously discussed new capabilities for users highlights some of the future challenges and opportunities.

Distributed mode for applications. Current applications are being analyzed from two standpoints. One study is that of optimum residence (host, LAP, IWS), based on frequency of change, usage volumes, and dependency on host-resident data bases. If the application is updated frequently, the added workload incurred in ensuring currency and in distributing multiple copies will nullify the benefits of local processing.

The second analysis measures and compares interactive versus host processing activity. This analysis was the basis for the current cooperative processing versions of the HONE configurators described earlier in this paper.

Distributed mode for information. Data bases used for information retrieval are being analyzed with respect to size, structure, frequency of update, volume of access, and type of usage. (Example usage types are sequential browsing versus keyword indexing.) These characteristics are being analyzed with respect to LAP/IWS storage capacity, network load implications, and possible subsets of users. For example, during a two-week period when preparing a proposal, a user might access announcement letters and the sales manual frequently, but only the portions pertaining to the products being proposed. To make possible local response-time efficiencies, the relevant data might be downloaded to a workstation on a "subscription" basis, thereby guaranteeing daily validation by the system of the currency of the data during that period.

As another example, a particular branch office might deal exclusively with banking customers. That branch would not require LAP or IWS residence of announcement letters pertaining to manufacturing or utility companies. Consider a third example in

which a marketing region may wish to manage all aspects of the training and education of its personnel. Efficiency would be gained by moving all the on-line training courses and education schedules to the LAP of that region, including system control functions to allow the LAP to download selected subsets to individual workstations.

Distributed mode network and system controls. From now on, the projected network traffic load will be an essential component of application and data base design. Equally important is the need for system controls, not only at the hosts but also throughout the whole network of LAPs and workstations. This year, in preparation for the new network architecture, the HONE organization installed the EZHONE user interface, much of which can also be a base for similar functions in other hosts. A complementary interface function is also being installed in every Intelligent Workstation. The IWS function (currently known as EZPC) is essential not only for display and keyboard management but also for activating the outboard controls necessary to the distributed operating capability just discussed.

Profiling. The selective distributions just described will require an on-line interactive profiling capability at each LAP and IWS, as well as at the host. Pilot work has begun for HONE in this area to prioritize the needs of individuals and LAP communities and to determine the complementary profile characteristics of its applications and data bases.

Concluding remarks

Designing, implementing, testing, and operating a host facility in a macrosystem environment as complex as that discussed in this paper is a challenge the HONE designers welcome. We are comfortable that we understand the parameters of the environment, and some of the early work we have already accomplished will be useful to other host systems. An even greater satisfaction comes from user responses to work already implemented. Our business is to satisfy users, and we welcome any ideas, suggestions, and comments this paper may elicit by letter, telephone, or by on-line HONE FEEDBACK.

William Boos IBM Information Systems Division, P.O. Box 105000, Palo Alto, California 94303-0821. Mr. Boos is the Director of Market Support Systems, with responsibility for the strategy and operations of a major on-line system serving 35 000 marketing and administrative people in 500 IBM locations. He joined IBM in 1961 in San Diego as a systems engineer. After four years of systems engineering and marketing experience, he assumed a systems engineering management position in Texas. From there, he became involved in marketing and technical support at the region and division headquarters levels. Mr. Boos was responsible for implementing the first IBM on-line terminal system for marketing support.

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